Breakout session: Communications

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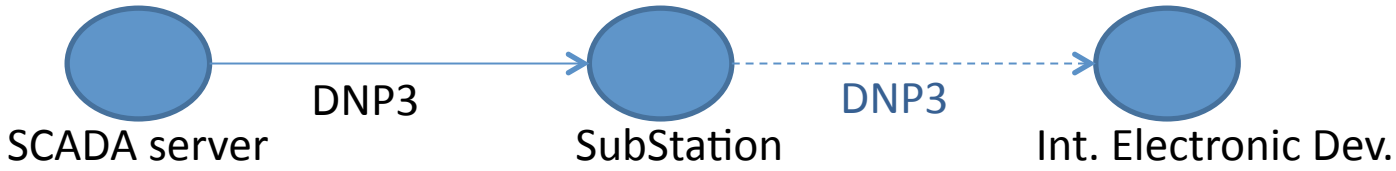

Application (use case)	where	Protocols needed	Comm. requirement (reliability)	Comm. requirement (latency/jitter)	range
Protection	SS to IEDs	**DNP3** + IEC61850 + …	Research (current GTC project and beyond) - Come up with {reliability, latency} requirements for different applications, based on typical and new control strategies - Come up with comm. {delay, loss, …} profiles for different technologies and protocols		
Volt-VAR optimization					
Integration of renewables (>15% penetration)					
Restoration (circuit reconfiguration)					
Monitoring					

Other Findings

- A clearer narrative needs to be developed for the research
- A top-down approach was perceived to be appropriate, starting from applications and their needs, down to communication requirements and technology and protocol selection.
- Traditionally communication has been a secondary system, due to the limitations of the technologies in the past. The new possibilities are not fully explored yet.

Other Findings

- Latency of communication is one of the major issues for certain critical applications, dealing with transient stability of the grid
- DNP3 is the dominant protocol used in substations and from substation to IEDs, and will remain so for the near future
- The research will be more relevant to industry if the focus was on DNP3, while keeping IEC-61850 in sight.
- Benchmarking is an important step. AEP may provide a sample circuit model which we may use in our simulations to evaluate communication strategies, protocols and technologies

Other Findings

- The team will contact EPRI and the following lead researchers to establish a working relationship and align the GTC research further with the existing research on communication in smart-grid:
  - Brian Seal at EPRI
  - Mathew Ollercyzk
  - Grant Gillcrest
- IEC-61850 allows automated service discovery; DNP3 has been amended to enable such capabilities
- DNP3 requires a lot more manual configuration, compared to IEC-61850, but is the current de-facto standard.
- Participants would like to know the issues of using DNP3+IP vs. DNP3 alone.